



ECO-1 / 6100 Series SPORTUB Spa Control



Troubleshooting Guide



HYDROQUIP™
THE SMART CHOICE™

Tools & Parts

- *Tools Required*
- *Parts Required*

Error Messages

- *FLO Message*
- *FLC Message*
- *Prr Message*
- *HL Message*

Programming

- *Low Level Programming*

Identified Problems

- *Nothing Works!*
- *Spa Is Not Heating*
- *Pump Does Not Work!*
- *Ozonator Does Not Work!*
- *Spa Light Does Not Work!*
- *Spaside Does Not Work!*

This Trouble Shooting Manual has been designed for easy simple step-by-step problem solving and fault isolation.

It is important to identify all of the possible causes of the problem before making a final diagnosis. What you see at first is usually a symptom of the problem, not necessarily the problem itself.

Read the entire trouble shooting procedure related to what you are testing for prior to performing the test. This will give you a clearer overall view and help to avoid a misdiagnosis.

Tools Required

- Phillips & flat screwdriver
- Pliers
- 11/32" nut driver
- ¼" open end wrench
- 3/8" open end wrench
- Jumper cable
- Multi-meter and clamp-on Ammeter
- Accurate thermometer
- GFCI tester (optional)



Parts Required

- Spaside control
- Temperature sensor
- Hi-Limit sensor
- 30A Fuse
- System Board



Pre-Test

Prior to the service call, have the homeowner check the following:

- Make sure spa is filled to the water level recommended.
- Insure that all water shut off valves are open and not vibrating closed.
- Assure that there is no obstruction to the pump suction fittings.
- Adjust diverter valves and/or jets to allow adequate back pressure to heater assembly.
- If an **FLO** error is reported: Remove the filter and operate the system. If the error goes away, a filter cleaning is required. Let the customer know that the filter may never **look dirty**, we are dealing with oils, lotions etc... Use an appropriate filter-cleaning agent.
- Get all of the information required off of the data label.

ECO-5 / 6100 Error Messages

Pressure or Flow Switch Not Activated

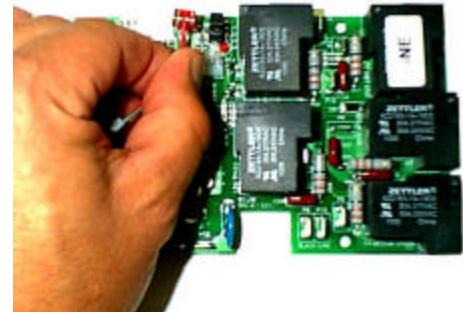
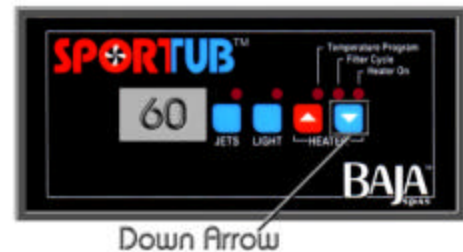
If 3 flashing dots appear below the temperature display, the printed circuit board must be checked to see if the LED error indicator is illuminated. If it **is not** the 3 flashing dots are related to a problem with the pressure or flow switch. If the system does not detect any pressure when the pump is manually or automatically turned on, 3 flashing dots will appear below the temperature display.

Note that there must be enough water in the spa for it to be used normally. This display can occur when the spa filter is dirty or when something limits the flow of water in the pipe.

When the 3 flashing dots appear, the heater is shut off.

Power can remain on while the following steps are performed.

- A system with a flow switch displaying the pressure or flow switch not activated message will not be corrected by installing a pressure switch.
- A system with a pressure switch displaying the pressure or flow switch not activated message will not be corrected by replacing the pressure switch.
- Verify that the pump is working. If the pump is not functioning properly, refer to the pump section of this manual.
- Make sure to clean the filter and to check for air locks, closed valves or anything that could restrict the flow of water.
- Verify that the pressure or flow switch cable is properly connected to the pressure or flow switch and the printed circuit board.
- If the problem still exists, lower the Set Point temperature to **60°** by pressing and holding the Down Arrow Key. After a 20 second cool down the pump will turn off. Short the two terminals of the pressure/flow switch cord using the jumper cable. 3 flashing dots should appear on the display.
- This message identifies the pressure or flow switch as the source of the problem.
- Readjust the pressure or flow switch. If it is not possible, replace the switch.
- If the 3 flashing dots did not appear in the previous step, the problem could be with the switch cable or the system circuit board.



ECO-5 / 6100 Error Messages

Pressure or Flow Switch Activated

If 3 flashing dots appear below the temperature display, the printed circuit board must be checked to see if the LED error indicator is illuminated. If it **is not** the 3 flashing dots are related to a problem with the pressure or flow switch. If the system detects any pressure while the pump is turned off, 3 flashing dots will appear below the temperature display.

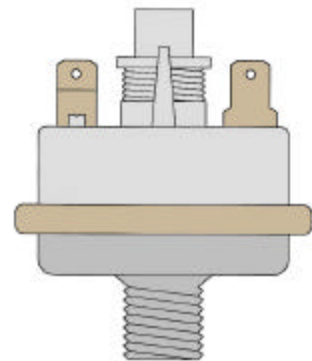
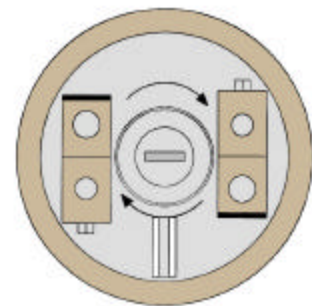
Power can remain On while the following steps are performed.

- Disconnect the pressure or flow switch cable from the printed circuit board.
- If the 3 flashing dots do not go away, replace printed circuit.
- Note: If the 3 flashing dots appear on the while the pump is operating, adjust or replace the pressure or flow switch.



Pressure Switch Adjustment

- Fill spa to maximum water level.
- Apply power and operate jets on high speed to establish full water flow throughout the system.
- Turn **OFF** all power to the system.
- Remove the wires from the pressure switch. Place an Ohmmeter across both terminals to verify that the circuit is "open".
- Rotate the pressure switch adjustment screw **counter-clockwise** until the ohmmeter indicates a "closed" circuit.
- Rotate the pressure switch adjustment screw **clockwise** until the ohmmeter just indicates an "open" circuit.
- Replace wires on pressure switch, apply power and operate spa as normal.



Important Test

- Press and hold the Up Arrow Key to turn on the low speed pump and heater, unplug the pump cord to simulate a pump failure.
- The heater should turn off and the 3 flashing dots should appear on the spaside control display.
- **Warning - If the heater remains on, quickly plug the pump back in and repeat the above steps.**

ECO-5 / 6100 Error Messages

Temperature Sensor

The system is constantly verifying that the reading of the temperature probe is within limits. If the actual spa water temperature greatly differs from that displayed by the spaside control or if 32°F is constantly displayed, this indicates a problem with the water temperature sensor.

Note that the temperature of the water should be over 35°F to perform the following steps.
Press a key after each step to reset the system.
Power can remain On.

- Verify that the temperature sensor is properly connected to the printed circuit board.
- Disconnect the sensor connector and try and clean the connector pins. A small coating of film can cause a bad connection. Also inspect for bent pins.
- Reconnect the sensor.
- If the display is still unchanged on the spaside control, replace the sensor with a spare and place the probe in the spa water.
- If this solved the problem, replace the sensor. Replace the printed circuit board if the problem has not been corrected.



ECO-5 / 6100 Error Messages

High Limit Sensor / Over Heat

If 3 flashing dots appear on the spaside control and the LED error indicator on the printed circuit board is illuminated, there is either a problem with the high limit temperature sensor or an over heat condition has occurred. This will happen whenever the water temperature read by the high limit temperature sensor exceeds 115°F.

Power to the system must be turned off then on to reset the system.
Power can remain On.

If the reading is below 115°F:

- With an accurate thermometer measure the temperature of the water.
- Check to see if the heater housing is hot.
- If the heater housing is hot, check for an obstructive flow of water (closed valves or dirty filter).
- If after clearing any obstructions the error still appears on the display and the LED error indicator is still illuminated on the printed circuit board, replace the printed circuit board.



ECO-5 / 6100 Error Messages

High Limit Sensor / Over Heat

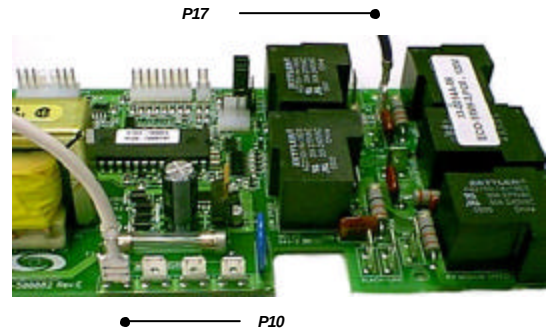
If the temperature of the water is at or higher than 115°F and the display on the Spaside control IS the right temperature, perform the following tests.

If the weather is very warm:

- Remove the spa cover. Wait until the spa cools down (Add cold-water if necessary).

If the weather is not a factor:

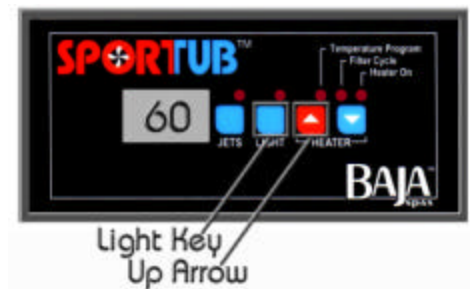
- Lower the Set Temperature below the actual temperature of the water (The Heater On indicator on the spaside control should turn Off).
- Open the access panel on the control box. With a voltmeter, read the voltage between P10 and P17 on the printed circuit board. This is the power supply for the heater relay coil. **If you do not read 120 VAC**, the pump may be overheating the water during the filtration cycle. Lower the filter cycle duration.



To Lower the Filter Cycle

- Press both the Light and Up Arrow Key. The current duration will be displayed.
- Use the Down Arrow Key to lower the value. (60, 120 or 180)
- When the desired value is displayed, press both Light and Up Arrow Keys again to save the new setting.

Note: If no key is depressed within 5 seconds, the system will revert back to the normal mode of operation.



ECO-5 / 6100 Error Messages

High Limit Sensor / Over Heat

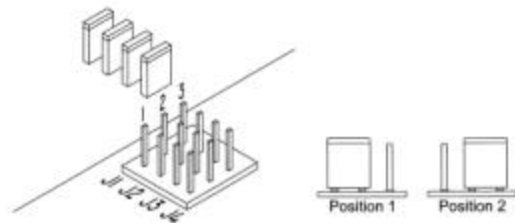
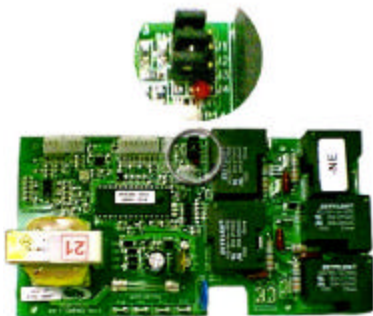
If the temperature of the water is at or higher than 115°F and the display on the spaside control DOES NOT show the right temperature, perform the following tests.

- Verify that the temperature sensor is inserted properly and that cold air cannot affect its readings.
- Use foam to insulate the sensor from cold air if it is the source of the problem.
- Verify that the temperature sensor is properly connected to the system board. If it is, replace the sensor.
- Replace the printed circuit board if the error message still appears on the display and the LED error indicator remains illuminated.

ECO-5 / 6100 Programming

Low Level Programming

It is possible to change the parameters of the Equipment System by positioning specific jumpers located on the system board.



Jumper 1

(Current Limiting)

Position 1:

(High Current – 240vac): There is no current restriction. This allows the heater to operate with the pump in high speed.

Position 2:

(Low Current – 120vac): The system will not turn the heater on when the pump is in high speed. The heater indicator will flash on the Spaside to tell the user that there is a call for heat but the heater is not allowed to start.

Jumper 2

(1 or 2 Speed Pump)

Position 1:

Two Speed Pump

Position 2:

Single Speed Pump

Jumper 3

(Filter Cycle Default Setting)

Position 1:

60 minutes Duration, Once a Day

Position 2:

180 minutes Duration, Twice a Day

Fahrenheit / Celsius

Press and hold the Light Key on the spaside control for 5 seconds to switch temperature modes.

ECO-5 / 6100 Identified Problems

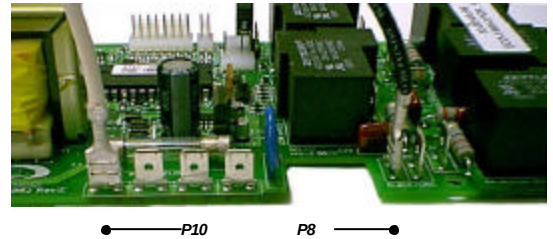
Nothing Works!

If everything is connected properly and nothing seems to work, there is probably a problem with the power supply. **If you detect Low or High voltage conditions at the input power connection contact an electrician.**

Perform the following tests to identify and correct the problem:

120V Operation

- Measure the input voltage between Line 1 (P8) and Neutral (P10). You should read approximately 120 VAC. (if you do not get a good voltage reading, check to make sure the system rocker switch is in the ON position and that the Line 1 fuse is good.)
- If you are getting good voltage readings but nothing seems to work, verify that the Spaside control is properly connected to the system circuit board (and external receptacle, if applicable). If nothing works, replace the circuit board.

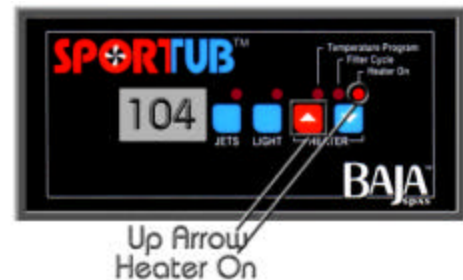


ECO-5 / 6100 Identified Problems

Spa Is Not Heating!

If the spa seems to not be heating the water, perform the following tests to correct the problem:

- Check the Spaside control for an error message. If this is the case, go to the specific section that refers to that message.
- Verify that there is a call for heat when the Set Temperature is increased. Press and hold the Up Arrow Key to increase the temperature set point.
- Verify that the Heater On indicator on the spaside control is illuminated.



ECO-5 / 6100 Identified Problems

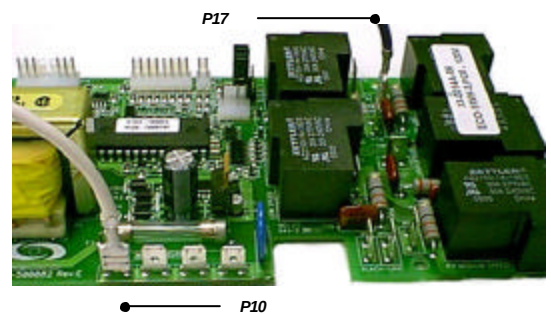
Spa Is Not Heating!

If the Heater On indicator does not illuminate:

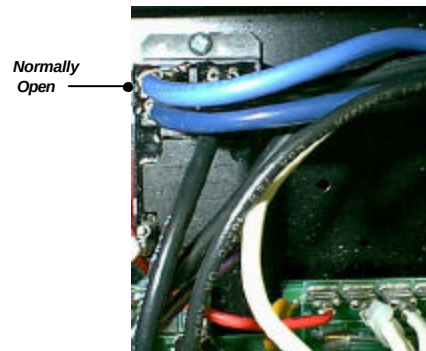
- With an accurate thermometer, measure the temperature and compare your reading with the temperature value displayed on the spaside control.
- If the values are different ($\pm 2^{\circ}\text{F}$), check to make sure the sensor is properly inserted into the dry-well or if hot air is affecting its readings. If so, insulate the back of the sensor.
- If the problem still exists, replace the temperature sensor with a spare one.
- If the spa is still not heating, replace the printed circuit board.

If the Heater On indicator does illuminate:

- Open the access panel on the control box and measure the voltage between P10 and P17 at the system circuit board. Replace the printed circuit board if you are not getting a reading of 120 VAC.



- If the voltage reading is good, measure the voltage at the heater relay between the NO (normally open) terminals connecting the heater wiring to the heater element. Replace the relay if you do not get a reading of 120 VAC.
- If voltage reading is good, verify that the nuts securing the heater wiring to the heater element are secure. If not, tighten the nuts at the element. If the problem has not been solved, replace the element.

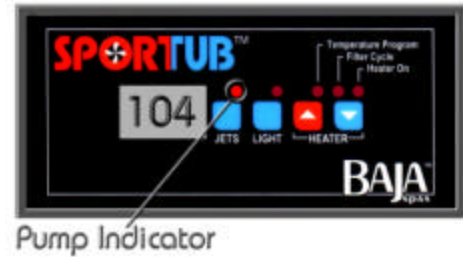


ECO-5 / 6100 Identified Problems

Pump Does Not Work!

If pump 1 does not operate, perform the following tests to correct the problem:

- Check to see if there is an error message on the spaside control. If this is the case, go to the specific section that refers to that message.
- Verify that jumper #2 is set properly for single or dual speed operation.
- Check spaside control to see if the Pump Indicator is illuminated when the pump key is depressed.

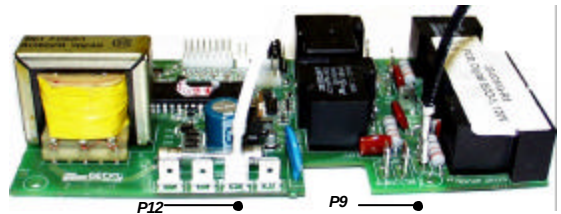
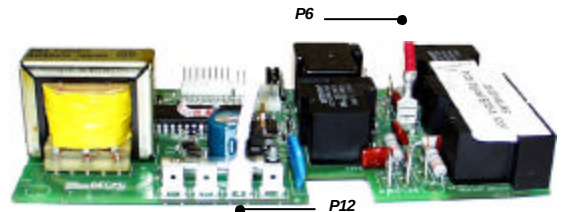


Pump Indicator does not illuminate

- If the Pump Indicator is not illuminating, use your spare spaside control to verify that the keypad is not defective. If the keypad is defective, replace the spaside control. If the keypad is not defective, replace the printed circuit board.

Pump Indicator does illuminate

- If the Pump indicator illuminates on the Spaside control when the pump key is pressed, verify that Pump works in one of the speeds.
- If the Pump works in one of two speeds, read the voltage at the system board for both speeds.
- Turn Pump onto high speed and measure the voltage between the white wire (P12) and the red wire (P6). Voltage reading should be 120 VAC.
- Turn Pump to Low speed and measure the voltage between the white wire (P12) and the black wire (P9). Voltage reading should be 120 VAC.
- If the voltage measurements are good, replace the Pump. If not, replace system circuit board.



ECO-5 / 6100 Identified Problems

Ozonator Does Not Work!

If the Ozonator does not work, perform the following tests to correct the problem:

- Note: The ozonator has a constant power supply. It does not run only during filtration cycles.
- Take a voltage measurement at the Ozone white wire (P12) and the black wire (P15). If no voltage is present, check the 30 amp inline fuse for continuity. Replace the fuse if it is found to be bad. Voltage reading should be 120 VAC.
- If the voltage measurements are good, replace the Ozonator.

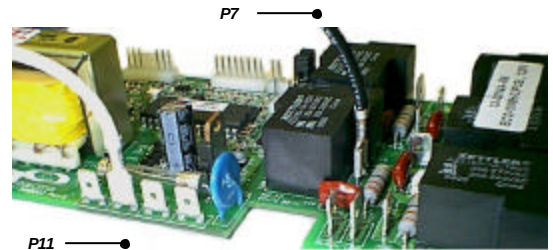


ECO-5 / 6100 Identified Problems

Spa Light Does Not Work!

If the spa light does not work, perform the following tests to correct the problem:

- It is important to measure voltage when the light is connected to the System. Power must remain on.
- The first step is to replace the bulb of the spa light.
- If the Light does not come on, use your spare spaside control to verify that the keypad is not defective. If it is, replace the spaside control.
- If the Light is still not coming on, open the access panel on the control box and measure the voltage between the two wires of the light connector on the printed circuit board at P7 & P11. Voltage reading should be 120 VAC.
- If the voltage reading at the printed circuit board is correct, ensure that there is 12 VAC present at the light socket. If you do not get a good voltage reading, replace the printed circuit board.



ECO-5 / 6100 Identified Problems

Spaside Does Not Work!

If the keys on the Spaside control seem to not be working, perform the following tests to correct the problem:

- Make sure the Programming Jumpers are set properly. (Refer to Programming)
- Replace spaside control with a spare.
- Check to see if the keys are responding.
- If they are, replace the spaside control.
- If they are still not responding, replace printed circuit board.

